

Title (en)
Compound crystal and method of manufacturing same

Title (de)
Kristall einer Verbindung und Verfahren zur deren Herstellung

Title (fr)
Cristal d'un composé et procédé de son fabrication

Publication
EP 1258544 A1 20021120 (EN)

Application
EP 02010607 A 20020510

Priority
JP 2001139926 A 20010510

Abstract (en)
Provided are a compound semiconductor crystal substrate 21 capable of reducing planar defects such as twins and anti-phase boundaries occurring in epitaxially grown crystals without additional steps beyond epitaxial growth, and a method of manufacturing the same. A compound single crystal substrate, the basal plane 22 of which is a nonpolar face, with said basal plane having a partial surface having polarity (a partial polar surface 23). Said partial polar surface is a polar portion of higher surface energy than said basal plane. A method of manufacturing the compound single crystal substrate, comprising the steps of: epitaxially growing a compound single crystal in the normal direction on a basal plane of a compound single crystal substrate wherein the basal plane is a nonpolar face and has a partial polar surface in a portion thereof, and either cutting the compound single crystal layer that has been grown in parallel to the basal plane, or removing at least said substrate to obtain a compound single crystal block, a basal plane of which is a nonpolar face only having a partial polar surface with the highest surface energy in a portion thereof. <IMAGE>

IPC 1-7
C30B 25/18; **C30B 25/02**; **C30B 25/20**

IPC 8 full level
C30B 29/36 (2006.01); **C23C 16/34** (2006.01); **C23C 16/42** (2006.01); **C30B 25/02** (2006.01); **C30B 25/18** (2006.01); **H01L 21/205** (2006.01); **H01L 33/32** (2010.01); **H01L 33/34** (2010.01)

CPC (source: EP US)
C30B 25/02 (2013.01 - EP US); **C30B 25/18** (2013.01 - EP US); **C30B 29/40** (2013.01 - EP US); **C30B 29/406** (2013.01 - EP US); **Y10S 438/931** (2013.01 - EP US)

Citation (search report)

- [A] US 6184144 B1 20010206 - LO YU-HWA [US]
- [A] LONG C ET AL: "STRUCTURAL DEFECTS IN 3C-SIC GROWN ON SI BY SUPERSONIC JET EPITAXY", JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 86, no. 5, 1 September 1999 (1999-09-01), pages 2509 - 2515, XP000934896, ISSN: 0021-8979
- [A] NIKITINA I P ET AL: "Structural properties of GaN grown on SiC substrates by hydride vapor phase epitaxy", DIAMOND AND RELATED MATERIALS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 6, no. 10, 1 August 1997 (1997-08-01), pages 1532 - 1535, XP004096982, ISSN: 0925-9635
- [A] CHO H D ET AL: "Zinc blende GaN grown by radio frequency plasma assisted molecular beam epitaxy", JOURNAL OF CRYSTAL GROWTH, NORTH-HOLLAND PUBLISHING CO. AMSTERDAM, NL, vol. 175-176, no. 3001, 1 May 1997 (1997-05-01), pages 125 - 128, XP004091279, ISSN: 0022-0248

Cited by
EP1519409A1; US7232488B2

Designated contracting state (EPC)
DE FR GB NL SE

DOCDB simple family (publication)
EP 1258544 A1 20021120; **EP 1258544 B1 20040317**; DE 60200261 D1 20040422; DE 60200261 T2 20050310; JP 2002338395 A 20021127; JP 3761418 B2 20060329; US 2003040167 A1 20030227; US 2004127042 A1 20040701; US 6703288 B2 20040309; US 7211337 B2 20070501

DOCDB simple family (application)
EP 02010607 A 20020510; DE 60200261 T 20020510; JP 2001139926 A 20010510; US 14018702 A 20020508; US 73422103 A 20031215